

ABSTRACT OF THE DISCLOSURE

Absorber material used in conventional EUVL reticles is eliminated by introducing a direct modulation in the complex-valued reflectance of the multilayer. A spatially localized energy source such as a focused electron or ion beam directly writes a reticle pattern onto the reflective multilayer coating. Interdiffusion is activated within the film by an energy source that causes the multilayer period to contract in the exposed regions. The contraction is accurately determined by the energy dose. A controllable variation in the phase and amplitude of the reflected field in the reticle plane is produced by the spatial modulation of the multilayer period. This method for patterning an EUVL reticle has the advantages of (1) avoiding the process steps associated with depositing and patterning an absorber layer and (2) providing control of the phase and amplitude of the reflected field with high spatial resolution.